PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:

EDMUND W. BROWN

Serial No.: 09/769,590

Filed: January 25, 2001

Group Art Unit: 33683

Examiner: Matthew C. Graham

DAMPENING CYLINDER FOR TRANSFER MECHANISM

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Christine Kierzek 1/18/05
Christine Kierzek Date

APPELLANT'S APPEAL BRIEF

Mail Stop – Box TTAB
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed is the Appellant's Appeal Brief in triplicate for the above-identified patent application.

Respectfully Submitted,

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P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

On November 16, 2004, appellant appealed from the Final Rejection of claims 22-30, 32, 34-35 and 37-39. The following is Appellant's Appeal Brief pursuant to 37 CFR § 1.192, submitted in triplicate. A check in the amount of $250.00 is enclosed. Please charge any additional fees to Deposit Account No. 50-1170 (three additional copies of page 1 are attached).

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REAL PARTY OF INTEREST

The real party in interest of the above-identified application is Topper Industrial, Inc., a Wisconsin corporation, located and doing business at 1729 East Frontage Road, Sturtevant, Wisconsin 53177, U.S.A.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF CLAIMS

Claims 22-30, 32, 34-35 and 37-40 comprise all of the current pending claims. Claims 22, 30, 38 and 40 are independent claims and all of the pending claims are apparatus claims. All of the claims have been finally rejected, and the rejection of all of the claims, namely, claims 22-30, 32, 34-35 and 37-40, is appealed herein. The claims, as they presently stand, are found in Appendix A of this Appellant's Appeal Brief.

STATUS OF THE AMENDMENTS

A Response to the Office Action containing claim amendments dated April 15, 2004 was filed by Applicant in response to the Office Action dated January 16, 2004. On August 17, 2004, the Examiner issued an Office Action finally rejecting claims 22-30, 32, 34-35 and 37-39. No mention of independent claim 40 was provided in the Office Action of September 17, 2004. However, such claim was previously rejected in the Office Action of January 16, 2004. As such, it is believed that the rejection of claim 40 has been maintained.

SUMMARY OF THE INVENTION

The present invention relates generally to conveyors, and in particular, to a dampening cylinder for a transfer mechanism which transfers a load between an upper and a lower conveyor (specification, page 1, lines 5-6).

The primary object of the present invention is to provide a dampening cylinder for a transfer mechanism which controls the movement of the transfer mechanism between a first upper conveyor; a second lower conveyor; and an intermediate position wherein a load being transferred may be acted upon (specification, page 3, lines 4-7).

In accordance with the present invention, a dampening cylinder (152) is provided. The dampening cylinder (152) includes a cylindrical housing (154) having first (156) and second (158) ends and an inner surface (160) defining a cavity in the housing (154) for receiving a fluid therein. A piston (166) slidably extends through the cavity in the housing (154). A flange (174) projects from the piston (166) within the cavity so as to divide the cavity in the housing (154) into first (178a) and second (178b) portions. The flange (174) terminates at a radially outer edge (184) which forms a slidable interface with the inner surface (160) of the housing. A flow conduit (190) has a first end communicating with the first portion (178a) of the cavity in the housing (154) and a second end communicating with the second portion (178b) of the housing (154). The flow conduit (190) includes first (192) and second (194) flow control valves for controlling the flow of fluid between the first (178a) and second (178b) portion of the cavity in the housing (154).

The first control valve (192) includes first and second orifices interconnected by first (196) and second (198) parallel flow paths. The first control valve (192) includes a flow regulator movable between a first retracted position wherein the flow regulator (202) is removed from the first flow path (196) and a second extended position wherein the flow regulator (202) extends into the first flow path (196). A check valve (200) is disposed in the second flow path

(198) of the first control valve (192). The check valve (200) allows for the flow of fluid through the second flow path in a first direction and prevents the flow of fluid through the second flow path (198) in a second direction.

The second flow control valve (194) also includes first and second orifices interconnected by first (208) and second (210) parallel flow paths. The first (192) and second (194) flow control valves are connected in series. The second flow control valve (194) includes a flow regulator (214) movable between a first retracted position wherein the flow regulator (214) of the second control valve (194) is removed from the first flow path (208) of the second flow control valve (194) and a second extended position wherein the flow regulator (214) of the second flow control valve (194) extends into the first flow path (208) of the second flow control valve (194). A check valve (212) of the second flow control valve (194) allows for the flow of fluid through the second flow path (210) of the second flow control valve (194) in the second direction and prevents the flow of fluid through the second flow path (210) of the second flow control valve (194) in the first direction.

The above description gives an overall summary of the preferred embodiment of the invention, the following summarizes the claims at issue.

Claim 22 is an independent claim which recites a dampening cylinder (152) that includes a cylindrical housing (154) having first (156) and second (158) ends and an inner surface (160) defining a cavity in the housing (154) for receiving a fluid therein. A piston (166) slidably extends through the cavity in the housing (154). A flange (174) projects from the piston (166) and is positioned within the cavity so as to divide the cavity in the housing (154) into first (178a) and second (178b) portions. The flange (174) terminates at a radially outer edge (184) which forms a slidable interface with the inner surface (160) of the housing (154). A flow conduit (190) has a first end communicating with the first portion (178a) of the cavity in the housing (154) and a second end communicating with the second portion (178b) of the cavity in the housing (154). The flow conduit includes first (192) and second (194) flow control valves for controlling the flow of fluid through the flow conduit between the first (178a) and second (178b)

portions of the cavity in the housing (154). Each flow control valve (192 and 194) includes a flow regulator (202 and 214) having a plurality of user selectable discrete settings for controlling the flow rate of the fluid flowing between the first (178a) and second (178b) portions of the cavity and for providing a discrete metered fluid flow through a corresponding flow control valve (192 and 194). The fluid flows between the first (178a) and second (178b) portions of the housing (154) flows through the flow conduit. The first flow control valve (192) controls the flow rate of the fluid into the second portion (178b) and the second flow control valve (194) controls the flow rate of the fluid into the first portion (178a).

Claim 23 is a an apparatus claim dependent on claim 22 which recites that the first flow control valve (192) includes first and second orifices interconnected by first (196) and second (198) parallel flow paths.

Claim 24 is an apparatus claim dependent on claim 23 which recites that the flow regulator (202) of the first flow control valve (192) is movable between a first retracted position wherein the flow regulator (202) of the first flow control valve (192) is removed from the first flow path (196) and a second extended position wherein the flow regulator (202) of the first flow control valve (192) extends into the first flow path (196).

Claim 25 is an apparatus claim dependent on claim 24 which recites that the first flow control valve (192) includes a check valve (200) disposed in the second flow path (198), the check valve (200) allowing the flow of fluid through the second flow path (198) in a first direction and preventing the flow of fluid through the second flow path (198) in a second direction.

Claim 26 is an apparatus claim dependent on claim 25 which recites that the second flow control valve (194) includes first and second orifices interconnected by first (208) and second (210) parallel flow paths.

Claim 27 is an apparatus claim dependent on claim 26 which recites that the first (192) and second (194) flow control valves are connected in series.

Claim 28 is an apparatus claim dependent on claim 26 which recites that the flow regulator (124) of the second flow control valve (194) is movable between a first retracted position wherein the flow regulator (214) of the second flow control valve (194) is removed from the first flow path (208) of the second flow control valve (194) and a second extended position wherein the flow regulator (214) of the second flow control valve (194) extends into the first flow path (208) of the second flow control valve (194).

Claim 29 is an apparatus claim dependent on claim 28 which recites that the second flow control valve (194) includes a check valve (212) disposed in the second flow path (210) of the second flow control valve (194), the check valve (212) of the second flow control valve (194) allowing the flow of fluid through the second flow path (210) of the second flow control valve (194) in the second direction and preventing the flow of fluid through the second flow path (210) of the second flow control valve (194) in the first direction.

Claim 30 is an independent claim which recites a dampening cylinder (152) that includes a cylindrical housing (152) having first (156) and second (158) ends and an inner surface (160) defining a cavity in the housing (154) for receiving a fluid therein. The housing (154) includes first and second openings therein. A piston (166) slidably extends through the cavity in the housing (154). A flange (174) projects from the piston (166) and is positioned within the cavity so as to divide the cavity in the housing (154) into first (178a) and second (178b) portions. The flange (174) terminates at a radially outer edge (184) which forms a slidable interface with the inner surface (160) of the housing (154). A first conduit has a first end connected to the first opening in the housing (154) for communicating with the first portion (178a) of the cavity in the housing (154) and a second end. A second conduit has a first end connected to the second opening in the housing (154) for communicating with the second portion (178b) of the cavity in the housing (154) and a second end. A control valve structure is disposed between the first and second conduits for controlling the flow of fluid between the first (178a) and second (178b)

portions of the cavity in the housing (154). The control valve structure includes first (192) and second (194) flow control valves in series between the first and second conduits. The first flow control valve (192) includes a flow regulator (202) having a plurality of user selectable settings and being movable into the first flow path (196). The flow regulator (202) provides a discrete metered fluid flow through the first flow path (196) and controls the flow rate of the fluid flowing from the first portion (178a) to the second portion (178b) of the cavity in the housing (154). The second flow control valve (194) includes a flow regulator (214) having a plurality of user selectable settings and being movable into the first flow path (208) of the second flow control valve (194). The flow regulator (214) provides a discrete metered fluid flow through the first flow path (208) and controls the flow rate of the fluid from the second portion (178a) to the first portion (178b) of the cavity in the housing (154). The fluid flows into and out of the first portion (178a) of the housing (154) solely through the first opening and the fluid flows into and out of the second portion (178b) of the housing (154) solely through the second opening in the housing (154).

Claim 32 is an apparatus claim dependent on claim 30 which recites that the first flow control valve (192) includes first and second orifices interconnected by first (196) and second (198) parallel flow paths, the first orifice communicating with the first portion (178a) of the cavity through the first conduit.

Claim 34 is an apparatus claim dependent on claim 32 which recites that the first flow control valve (192) includes a check valve (200) disposed in the second flow path (198), the check valve (200) allowing the flow of fluid through the second flow path (198) in a first direction and preventing the flow of fluid through the second flow path (198) in a second direction.

Claim 35 is an apparatus claim dependent on claim 34 which recites that the second flow control valve (194) includes first and second orifices interconnected by first (208) and second (210) parallel flow paths.

Claim 37 is an apparatus claim dependent on claim 35 which recites that the second flow control valve (194) includes a check valve (212) disposed in the second flow path (210) of the second flow control valve (194), the check valve (212) of the second flow control valve (194) allowing the flow of fluid through the second flow path (210) of the second flow control valve (194) in the second direction and preventing the flow of fluid through the second flow path (210) of the second flow control valve (194) in the first direction.

Claim 38 is an independent claim which recites a dampening cylinder (152) that includes a cylindrical housing (154) having first and second ends and an inner surface defining a cavity in the housing (154) for receiving a fluid therein. The housing (154) includes first and second openings therein. A piston (166) slidably extends through the cavity in the housing (154). A flange (174) projects from the piston (166) and is positioned within the cavity so as to divide the cavity in the housing (154) into first (178a) and second (178b) portions. The flange (174) terminates at a radially outer edge (184) which forms a slidable interface with the inner surface (160) of the housing (154). A first conduit has a first end connected to the first opening in the housing (154) for communicating with the first portion (178a) of the cavity in the housing (154) and a second end. A second conduit has a first end connected to the second opening in the housing for communicating with the second portion (178a) of the cavity in the housing (154) and a second end. A first flow control valve (194) has first and second orifices interconnected by first (196) and second (198) parallel flow paths. The first orifice is connected to the second end of the first conduit so as to allow the first (196) and second (198) flow paths through the first flow control valve (192) to communicate with the first portion (178a) of the cavity through the first conduit. The first flow control valve (192) includes a flow regulator (202) having a plurality of user selectable settings and being movable into the first flow path (196) through the first flow control valve (192). The flow regulator (202) provides a discrete metered fluid flow through the first flow path (196) and controls the flow rate of the fluid flowing from the first portion (178a) to the second portion (178b) of the cavity in the housing (154). The first flow control valve (192) also includes a check valve (200) disposed in the second flow path (198) through the first flow control valve (192). The check valve (200) allows the flow of fluid through the second flow path (198) through the first flow control valve (192) in a first direction and prevents the

flow of fluid through the second flow path (198) through the first flow control valve (192) in a second direction. A second flow control valve (194) has first and second orifices interconnected by first (208) and second (210) parallel flow paths and is connected in series with the first flow control valve (192). The first orifice of the second flow control valve (194) is connected to the second end of the second conduit so as to allow the first (208) and second (210) flow paths through the second flow control valve (194) to communicate with the second portion (178b) of the cavity through the second conduit. The second orifice of the second flow control valve (194) communicates with the first orifice of the first flow control valve (192). The second flow control valve (194) includes a flow regulator (214) having a plurality of user selectable settings and being movable into the first flow path (208) through the second flow control valve (194). The flow regulator (214) provides a discrete metered fluid flow through the first flow path (208) and controls the flow rate of the fluid from the second portion to the first portion (178b) of the cavity in the housing. The second flow control valve (194) also includes a check valve (212) disposed in the second flow path (210) through the second flow control valve (194). The check valve (212) allows the flow of fluid through the second flow path (210) through the second flow control valve (194) in the second direction and prevents the flow of fluid through the first flow path (208) through the second control valve (194) in the first direction. The fluid flows into and out of the first portion (178a) of the housing (154) solely through the first opening in the housing (154) and the fluid flows into and out of the second portion (178b) of the housing (154) solely through the second opening in the housing (154).

Claim 39 is an apparatus claim dependent on claim 38 which recites the dampening cylinder including a mounting flange extending from the cylindrical housing for facilitating the mounting of the dampening cylinder to a support.

Claim 40 is an independent claim which recites a dampening cylinder (152) that includes a cylindrical housing (154) having first and second ends and an inner surface (160) defining a cavity in the housing (154) for receiving a fluid therein. A piston (166) slidably extends through the cavity in the housing (154). A flange (174) projects from the piston (166) and is positioned within the cavity so as to divide the cavity in the housing (154) into first (178a) and second

(178b) portions. The flange (174) terminates at a radially outer edge (184) which forms a slidable interface with the inner surface (160) of the housing (154). A flow conduit has a first end communicating with the first portion (178a) of the cavity in the housing (154) and a second end communicating with the second portion (178b) of the cavity in the housing (154). The flow conduit includes first (192) and second (194) flow control valves having flow regulators (202 and 214) to allow fluid to flow between the first (178a) and second (178b) portions of the cavity in the housing (154) . The flow regulator (202) of the first flow control valve (192) has a plurality of user selectable discrete settings for controlling the flow rate and controlling the flow rate of the fluid flowing from the first portion (178a) to the second portion (178b) of the cavity in the housing (154) and for providing a discrete metered fluid flow of the fluid flowing from the first portion (178a) to the second portion (178b) of the housing (154). The flow regulator (214) of the second flow control valve (194) has a plurality of user selectable discrete settings for controlling the flow rate and controlling the flow rate of the fluid flowing from the second portion (178b) to the first portion (178a) of the cavity in the housing (154) and for providing a discrete metered fluid flow of the fluid flowing from the second portion (178b) to the first portion (178a) of the housing (154).

ISSUE

The issue presented for review is as follows:

I. Whether claims 22-30, 32, 34-35 and 37-40 are patentable under 35 U.S.C. § 103(a) over British Publication No. 1,257,827 in view of Kroeker et al., U.S. Patent No. 4,969,643.

GROUPING OF THE CLAIMS

Claims 22-29 stand or fall together, independent from the other claims appealed herein.

Claims 30, 32, 34-35 and 37 stand or fall together, independent from the other claims appealed herein.

Claims 38-39 stand or fall together, independent from the other claims appealed herein.

Claim 40 stands alone, independent from the other claims appealed herein.

ARGUMENT

Issue I

I. Rejection

The Examiner has rejected all of the pending claims, namely, claims 22-30, 32, 34-35 and 37-40, under 35 U.S.C. 103(a) as being unpatentable over British Publication No. 1,257,827 (hereinafter referred to as the "827 publication") in view Kroeker et al., U.S. Patent No. 4,969,643 (hereinafter referred to as "Kroeker").

The Examiner has provided little explanation about his basis for rejecting the pending claims. In the initial Office Action dated January 16, 2002, the Examiner rejected all of the pending claims under 35 U.S.C. § 102(b) as being anticipated by the '827 publication. The Examiner referred to Fig. 2, of the '827 publication and identified maximum pressure valves (35) and check valves (380 thereof. This rejection was maintained in the Office Action of July 19, 2002. In an Office Action dated January 13, 2003, the Examiner altered his basis for rejection. More specifically, in the January 13, 2003 Office Action, the Examiner rejected all of the pending claims under 35 U.S.C. § 103(a) as being unpatentable over the '827 publication in view of Kroeker. In explaining his basis for rejecting the pending claims, the Examiner merely noted the previous discussion of the '827 publication and indicated that the claimed invention differs only from the structure in the '827 publication in the type of control valves. The Examiner pointed to Kroeker as showing an adjustable control valve having discrete user-selectable settings in a shock absorber. In the Examiner's opinion, it would have been obvious to one or ordinary skill in the art to utilize manually adjustable valves in the shock absorber of the '827 publication in view of the teaching of Kroeker so as to provide great control of the shock absorber such as taught by Kroeker. This rejection was maintained in the Office Actions of June 26, 2003; January 16, 2004 and September 17, 2004.

II. Prior Art

The British '827 publication discloses a device for balancing the forces of inertia in reciprocating stands of coal in rolling mills. As best seen in Figs. 2-3, the device includes a double-acting air cylinder (1) having a piston (2) slidably received therein which defines first and second working spaces in an air cylinder. The working spaces are interconnected by a conduit that includes first and second maximum pressure valves (35) having corresponding check valves (38) connected in parallel therewith. The working spaces are also connected by a second conduit (main 33) having a bypass valve (34) therein. It is intended that the balancing device balance the pressure in each working space.

In order to accomplish this task, the device disclosed in the '827 publication, each maximum pressure valve (35) is connected in series with a corresponding check valve (38) that is connected in parallel with the other of the maximum pressure valves (35). In operation, once the pressure within the one of the working spaces exceeds a predetermined threshold, the maximum pressure valve (35) operatively connected to the one of the working spaces opens thereby allowing the air contained in the working space to flow therepast. The air passes through the check valve connected in series with the open maximum pressure valve and flows into the other working space of the double-acting air cylinder. In other words, one of the maximum pressure valves and a corresponding check valve controls the flow of fluid from one working space into the other working space of the air cylinder. Bypass valve (34) is controlled by an electromagnetic coil (43). When an electric current is present on coil (43), plunger (40) of bypass valve (34) is removed from main (33) thereby allowing piston (2) to be slidably repositioned within air cylinder (1) independent of the threshold of maximum pressure valves (35).

Kroeker is directed to an improved exercise apparatus (10). The exercise apparatus includes a hydraulic cylinder (36) having a piston (35) passing therethrough. A ring (56) extends about the piston (38) and separates the interior of the cylinder into first and second portions. Lines (80 and 182) are connected to corresponding portions of the interior of the cylinder and include corresponding fluid control valves (88 and 90) for constricting the fluid flowing from each portion of the cylinder. In addition, the hydraulic cylinder includes first and second inlet lines (64 and 66) operatively connected to a reservoir. Each portion of the cylinder draws fluid from the reservoir through inlet lines (64 and 66) in response to a suction generated by operation of a hydraulic cylinder. As hereinafter described, nothing in Kroeker shows or suggests a mechanism for controlling the flow rate of fluid into the first and second portions of hydraulic cylinder (36) through corresponding inlet lines (64 and 66).

III. CLAIMS 22-29

As heretofore described, claim 22 defines a dampening cylinder having a cylindrical housing, a piston slidably extending through a cavity in the housing and a flange projecting from the piston so as to divide the cavity in the housing into first and second portions. A flow conduit has a first end communicating with the first portion of the cavity and a second end communicating with the second portion of the cavity. The flow conduit includes first and second control valves for controlling the flow of fluid between the first and second portions of the cavity. Each flow control valve includes a flow regulator having a plurality of user selectable discrete settings for controlling the flow rate at which the fluid flows between the first and second portions of the cavity and for providing a discrete metered fluid flow through a corresponding flow control valve. More specifically, due to the placement of the flow control valves in the flow conduit, the first and second control valves control the fluid flow rate into the adjacent first portion and second portion, respectively. The location of the first and second flow control valves immediately upstream of the portions that receive the fluid passing through the respective control valves enables the control valves to precisely and accurately control the amount of fluid flowing through each flow control valve into the adjacent portion of the cavity in the cylinder housing. As hereinafter described, neither of the cited references shows or suggests a dampening cylinder wherein flow regulators control the rate of fluid flowing between the first adjacent and second portions of the cavity in the housing. Consequently, it is believed that independent claim 22 defines over the cited references.

Unlike the dampening cylinder of independent claim 22, nothing in the British '827 publication shows or suggests a valve system in which the amount of fluid flowing between working spaces can be discretely metered. More specifically, in the device of the '827 publication, the maximum pressure valve and check valve connected in series therewith are biased to a closed position only by corresponding springs associated therewith. The springs exert a constant force on the maximum pressure valve and on the stop of the check valve to keep the valves closed. When the force of the springs are overcome by the force of the fluid exerted

within a work space, the maximum pressure valve and check valve are opened. Once opened, all of the fluid that passes by the maximum pressure valve, passes the check valve and enters the other of working spaces. The spring of the check valve cannot be manually or otherwise controlled in any manner so to meter or alter the fluid flowing past the check valve into the working space. Hence, unlike the valve structure of independent claim 22, the valve structure shown in the British '827 publication provides no mechanism for controlling the rate of fluid flow into a corresponding working space.

Further, it is noted that the device disclosed in the '827 publication includes a secondary path between the first and second working space via the bypass valve (34) in the main (33). As heretofore described, by opening the bypass valve (34), the working spaces of the balancing device are directly connected through the main (33). Hence, by providing the bypass valve (34) in the main (33), it is clearly suggested in the '827 publication that the maximum pressure valves (35) cannot be fully opened so as to directly connect the working spaces of the double-acting air cylinder. This is in directly contrast to the structure defined in independent claim 22 wherein the flow regulators (202 and 204) ". . . have a plurality of user-selectable discrete settings for controlling the flow rate of the fluid flowing between the first and second portions of the cavity." Hence, it is believed that the structure disclosed in the British '827 publication teaches away from the dampening cylinder defined in independent claim 22.

Kroeker cannot remedy the deficiency of the disclosure of the British '827 publication. Unlike the dampening cylinder of independent claim 22, Kroeker does not disclose a dampening cylinder wherein fluid flows directly between the first and second portions of the cylinder. Further, unlike the dampening cylinder of independent claim 22 that requires flow regulators that control the flow rate of the fluid flowing into a corresponding portions of the cavity in the housing, Kroeker has no mechanism for controlling the flow of fluid from the reservoir into corresponding portions of the cavity within the hydraulic cylinder. The flow of fluid into the portions of the cavity are controlled by suction and the flow regulators disclosed in Kroeker merely control the rate at which the fluid exits the corresponding portions of the interior of the hydraulic cylinder.

In summary, unlike the dampening cylinder defined in claim 22, neither of the cited references shows or suggests a dampening cylinder having:

1. a first control valve that controls the flow rate of the fluid flowing into the second portion of the cavity in the housing;
2. a second control valve that controls the flow rate of the fluid flowing into the first portion of the cavity in the housing; or
3. flow regulators having a plurality of user-selectable discrete settings for controlling the flow rate of the fluid flowing between the first and second portions of the cavity and providing a discrete metered flow through a corresponding flow control valve.

In view of the foregoing, it is believed that neither of the cited references shows or suggest a dampening cylinder as defined in independent claim 22 of the present application. As such, it is believed that independent claim 22 is in proper form for allowance and withdrawal of the Examiner's rejection is respectfully requested.

Claim 23-29 depend either directly or indirectly from independent claim 22 and further define a dampening cylinder not shown or suggested in the prior art. It is believed that claims 23-29 are allowable as depending from an allowable base claim and in view of the subject matter of each claim.

IV. CLAIMS 30, 32, 34-35 and 37

Claim 30 defines a dampening cylinder incorporating a cylindrical housing and a piston slidable through the housing. The housing includes first and second openings therein. The first conduit has the first end connected to the first opening in the housing for communicating with the first portion of the cavity in the housing and a second conduit having a first end connected to the second opening in the housing for communicating with the second portion of the cavity in the

housing. A control valve structure is disposed between the first and second conduits to control the flow of fluid between the first and second portions of the cavity in the housing. The control valve structure includes first and second flow control valves in series between the first and second conduits. The first flow control valve includes a flow regulator having a plurality of user selectable settings and is movable into the first flow path. The flow regulator provides a discrete metered fluid flow through the first flow path and controls the flow rate of the fluid flowing from the second portion into the first portion of the cavity in the housing. The second flow control valve includes a flow regulator having a plurality of user selected settings and is movable into the first flow path of the second flow control valve. The flow regulator provides a discrete metered fluid flow through the first flow path in controls the flow rate of the fluid flowing from the first portion into the second portion of the cavity in the housing. Further, claim 30 requires the fluid to flow into and out of the first portion of the housing solely through the first opening and for the fluid to flow into and out of the second portion of the housing solely through the second opening in the housing.

As heretofore described with respect to independent claim 22, neither of the cited references shows or suggests a dampening cylinder that incorporates flow regulators which provide metered flow of the fluid flowing therethrough in order to control the flow of fluid between the first and second portions of the cavity in the housing of the dampening cylinder, as required by claim 30. Such a structure is not shown or suggested in the '827 or the Kroeker patent. Hence, for the reasons noted with respected to independent claim 22, it is believed that independent claim 30 defines over the cited references and passage to allowance is respectfully requested.

In addition, nothing in the cited references shows or suggests a dampening cylinder wherein the fluid flowing into and out of the first portion of the housing flows solely through the first opening and the fluid flowing into and out of the second portion of the housing flows solely through the second opening in the housing, as required by independent claim 30. The device disclosed in the '827 publication includes the main (33) that interconnects the first and second working spaces. In Kroeker, the hydraulic cylinder includes distinct inlet and outlet lines

operatively connected to a reservoir. The examiner provides no basis for the proposition that the structures in the cited references could be modified to provide for the dampening cylinder defined in independent claim 30. In fact, it is quite possible that the cited references were modified, such modified structures would not work for their intended proposes. Consequently, the examiner points to no teaching or suggestion in the cited references to provide a dampening cylinder wherein the fluid flowing into and out of the first portion of the housing flows solely through the first opening and the fluid flowing into and out of the second portion of the housing flows solely through the second opening in the housing. As such, it is believe that claim 30 defines over the cited references and is in proper form for allowance.

Claims 32, 34-35 and 37 depend either directly or indirectly from independent claim 30 and further define a dampening cylinder not shown or suggested in the prior art. It is believed that such claims are allowable as depending from an allowable base claim and in view of the subject matter of each claim.

V. CLAIMS 38-39

Similar to claims independent claims 22 and 30, claim 38 defines a dampening cylinder that incorporates first and second flow regulators. Each flow regulator has a plurality of user-selectable discrete settings for controlling the flow rate of the fluid flowing between the first and second portions of the cavity and for providing a discrete metered flow through a corresponding flow control valve. Further, like claim 30, claim 38 defines a dampening cylinder the fluid flows into and out of the first portion of the housing solely through the first opening and the fluid flows into and out of the second portion of the housing solely through the second opening in the housing.

As heretofore described with respect to independent claim 30, neither of the cited references shows or suggests a dampening cylinder that incorporates flow regulators that have a plurality of user-selectable discrete settings for controlling the flow rate of the fluid flowing between the first and second portions of the cavity and for providing a discrete metered flow

through a corresponding flow control valve. Further, nothing in the cited references shows or suggests a dampening cylinder wherein the fluid flowing into and out of the first portion of the housing flows solely through the first opening and the fluid flowing into and out of the second portion of the housing flows solely through the second opening in the housing. As a result, it is believed that independent claims 38 clearly defines over the cited references and is proper form for allowance.

Claim 39 depends either directly or indirectly from independent claim 38 and further defines a dampening cylinder not shown or suggested in the prior art. It is believed that claim 39 is allowable as depending from an allowable base claim and in view of the subject matter of each claim.

VI. CLAIM 40

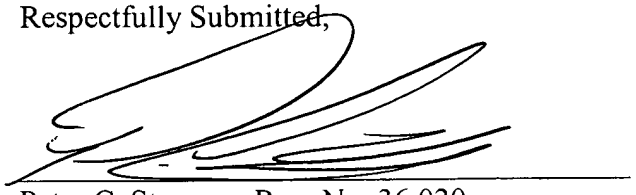
Similar to claims independent claims 22, 30 and 38, claim 40 defines a dampening cylinder that incorporates first and second flow regulators. Each flow regulator has a plurality of user-selectable discrete settings for controlling the flow rate of the fluid flowing between the first and second portions of the cavity and for providing a discrete metered flow through a corresponding flow control valve. Again, as heretofore described, none of the cited references show or suggest such a structure. Consequently, it is believed that the examiner's rejection of independent claim 40 is improper and claim 40 is in proper form for allowance.

CONCLUSION

Contrary to the Examiner's assertions, claims 22-30, 32, 34-35 and 37-40 are not obvious in view of the cited references. The claims define a dampening cylinder not shown or suggested in the prior art. There are significant structural differences between Appellant's claimed invention and the cited references which the Examiner has failed to appreciate. These differences provide significant advantages over the structures disclosed in the cited references. Consequently, appellant believes that all of the claims appealed herein, namely, claims 22-30,

32, 34-35 and 37-40 are in proper form for allowance. As such, applicant requests that the Board overturn the examiner's rejection of all of the pending claims, namely, claims 22-30, 32, 34-35 and 37-40, and pass such claims to allowance.

Respectfully Submitted,



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APPENDIX A

22. A dampening cylinder, comprising:

a cylindrical housing having first and second ends and an inner surface defining a cavity in the housing for receiving a fluid therein;

a piston slidably extending through the cavity in the housing;

a flange projecting from the piston and positioned within the cavity so as to divide the cavity in the housing into first and second portions, the flange terminating at a radially outer edge which forms a slidable interface with the inner surface of the housing; and

a flow conduit having a first end communicating with the first portion of the cavity in the housing and a second end communicating with the second portion of the cavity in the housing, the flow conduit including:

first and second flow control valves for controlling the flow of fluid through the flow conduit between the first and second portions of the cavity in the housing, each flow control valve including a flow regulator having a plurality of user selectable discrete settings for controlling the flow rate of the fluid flowing between the first and second portions of the cavity and for providing a discrete metered fluid flow through a corresponding flow control valve;

wherein the fluid flowing between the first and second portions of the housing flows through the flow conduit.

23. The dampening cylinder of claim 22 wherein the first flow control valve includes first and second orifices interconnected by first and second parallel flow paths.

24. The dampening cylinder of claim 23 wherein the flow regulator of the first flow control valve is movable between a first retracted position wherein the flow regulator of the first flow control valve is removed from the first flow path and a second extended position wherein the flow regulator of the first flow control valve extends into the first flow path.

25. The dampening cylinder of claim 24 wherein the first flow control valve includes a check valve disposed in the second flow path, the check valve allowing the flow of fluid through the second flow path in a first direction and preventing the flow of fluid through the second flow path in a second direction.

26. The dampening cylinder of claim 25 wherein the second flow control valve includes first and second orifices interconnected by first and second parallel flow paths.

27. The dampening cylinder of claim 26 wherein the first and second flow control valves are connected in series.

28. The dampening cylinder of claim 26 wherein the flow regulator of the second flow control valve is movable between a first retracted position wherein the flow regulator of the second flow control valve is removed from the first flow path of the second flow control valve and a second extended position wherein the flow regulator of the second flow control valve extends into the first flow path of the second flow control valve.

29. The dampening cylinder of claim 28 wherein the second flow control valve includes a check valve disposed in the second flow path of the second flow control valve, the check valve of the second flow control valve allowing the flow of fluid through the second flow path of the second flow control valve in the second direction and preventing the flow of fluid through the second flow path of the second flow control valve in the first direction.

30. A dampening cylinder, comprising:

a cylindrical housing having first and second ends and an inner surface defining a cavity in the housing for receiving a fluid therein, the housing including first and second openings therein;

a piston slidably extending through the cavity in the housing;

a flange projecting from the piston and positioned within the cavity so as to divide the cavity in the housing into first and second portions, the flange terminating at a radially outer edge which forms a slidable interface with the inner surface of the housing;

a first conduit having a first end connected to the first opening in the housing for communicating with the first portion of the cavity in the housing and a second end;

a second conduit having a first end connected to the second opening in the housing for communicating with the second portion of the cavity in the housing and a second end; and

a control valve structure disposed between the first and second conduits for controlling the flow of fluid between the first and second portions of the cavity in the housing, the control valve structure includes first and second flow control valves in series between the first and second conduits;

wherein:

the first flow control valve includes a flow regulator having a plurality of user selectable settings and being movable into the first flow path, the flow regulator providing a discrete metered fluid flow through the first flow path and controlling the flow rate of the fluid flowing from the first portion to the second portion of the cavity in the housing;

the second flow control valve includes a flow regulator having a plurality of user selectable settings and being movable into the first flow path of the second flow control valve, the flow regulator providing a discrete metered fluid flow through the first flow path and controlling the flow rate of the fluid from the second portion to the first portion of the cavity in the housing;

the fluid flows into and out of the first portion housing solely through the first opening; and

the fluid flows into and out of the second portion of the housing solely through the second opening in the housing.

31. (Cancelled)

32. The dampening cylinder of claim 30 wherein the first flow valve includes first and second orifices interconnected by first and second parallel flow paths, the first orifice communicating with the first portion of the cavity through the first conduit.

33. (Cancelled)

34. The dampening cylinder of claim 32 wherein the first flow control valve includes a check valve disposed in the second flow path, the check valve allowing the flow of fluid through the second flow path in a first direction and preventing the flow of fluid through the second flow path in a second direction.

35. The dampening cylinder of claim 34 wherein the second flow control valve includes first and second orifices interconnected by first and second parallel flow paths.

36. (Cancelled)

37. The dampening cylinder of claim 35 wherein the second flow control valve includes a check valve disposed in the second flow path of the second flow control valve, the check valve of the second flow control valve allowing the flow of fluid through the second flow path of the second flow control valve in the second direction and preventing the flow of fluid through the second flow path of the second flow control valve in the first direction.

38. A dampening cylinder, comprising:

a cylindrical housing having first and second ends and an inner surface defining a cavity in the housing for receiving a fluid therein, the housing including first and second openings therein;

a piston slidably extending through the cavity in the housing;

a flange projecting from the piston and positioned within the cavity so as to divide the cavity in the housing into first and second portions, the flange terminating at a radially outer edge which forms a slidable interface with the inner surface of the housing;

a first conduit having a first end connected to the first opening in the housing for communicating with the first portion of the cavity in the housing a second end;

a second conduit having a first end connected to the second opening in the housing for communicating with the second portion of the cavity in the housing and a second end;

a first flow control valve having first and second orifices interconnected by first and second parallel flow paths, the first orifice connected to the second end of the first conduit so as to allow the first and second flow paths through the first flow control valve to communicate with the first portion of the cavity through the first conduit, the first flow control valve including:

a flow regulator having a plurality of user selectable settings and being movable into the first flow path through the first flow control valve, the flow regulator providing a discrete metered fluid flow through the first flow path and controlling

the flow rate of the fluid flowing from the first portion to the second portion of the cavity in the housing; and

a check valve disposed in the second flow path through the first flow control valve, the check valve allowing the flow of fluid through the second flow path through the first flow control valve in a first direction and preventing the flow of fluid through the second flow path through the first flow control valve in a second direction;

a second flow control valve having first and second orifices interconnected by first and second parallel flow paths and being connected in series with the first flow control valve, the first orifice of the second flow control valve connected to the second end of the second conduit so as to allow the first and second flow paths through the second flow control valve to communicate with the second portion of the cavity through the second conduit, and the second orifice of the second flow control valve communicating with the first orifice of the first flow control valve, the second flow control valve including:

a flow regulator having a plurality of user selectable settings and being movable into the first flow path through the second flow control valve, the flow regulator providing a discrete metered fluid flow through the first flow path and controlling the flow rate of the fluid from the second portion to the first portion of the cavity in the housing; and

a check valve disposed in the second flow path through the second flow control valve, the check valve allowing the flow of fluid through the second flow path through the second flow

control valve in the second direction and preventing the flow of fluid through the first flow path through the second control valve in the first direction;

wherein:

the fluid flows into and out of the first portion of the housing solely through the first opening in the housing; and

the fluid flows into and out of the second portion of the housing solely through the second opening in the housing.

39. The dampening cylinder of claim 38 further comprising a mounting flange extending from the cylindrical housing for facilitating the mounting of the dampening cylinder to a support.

40. A dampening cylinder, comprising:

a cylindrical housing having first and second ends and an inner surface defining a cavity in the housing for receiving a fluid therein;

a piston slidably extending through the cavity in the housing;

a flange projecting from the piston and positioned within the cavity so as to divide the cavity in the housing into first and second portions, the flange terminating at a radially outer edge which forms a slidable interface with the inner surface of the housing; and

a flow conduit having a first end communicating with the first portion of the cavity in the housing and a second end communicating with the second portion of the cavity in the housing, the flow conduit including first and second flow control valves having flow regulators to allow fluid to flow between the first and second portions of the cavity in the housing,

wherein:

the flow regulator of the first control valve has a plurality of user selectable discrete settings for controlling the flow rate and controlling the flow rate of the fluid flowing from the first portion to the second portion of the cavity in the housing and for providing a discrete metered fluid flow of the fluid flowing from the first portion to the second portion of the housing; and

the flow regulator of the second control valve has a plurality of user selectable discrete settings for controlling the flow rate and controlling the flow rate of the fluid flowing from the second portion to the first portion of the cavity in the housing and for providing a discrete metered fluid flow of the fluid flowing from the second portion to the first portion of the housing.